FANUC

Open Automation Solutions

CONTROLSTATION NT

ControlStation Models WTA / WTE

User's Guide

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February 2000

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Contents of This Manual

This manual describes the features and operation of the following ControlStation products:

ControlStation NT Model WTA

- 10.4 inch, Model WTA, ControlStation with ControlStation automation software and PCI/ISA expansion.

ControlStation NT Model WTE

- 10.4 inch, Model WTE, ControlStation with ControlStation automation software and PC/104 expansion.

Technical Support

If you have a technical problem with your ControlStation hardware or automation software that cannot be resolved by referring to the product documentation help, you can contact us by:

Telephone: 1-800-GEFANUC
E-mail: support@gefedmonton.ge.com

To help us assist you as quickly as possible, keep the following information handy:

- The product name, serial number, and version number.
- The brand and model of any hardware in your system.
- Operating system and version number.
- The steps you performed prior to encountering the problem.

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Chapter 1

ControlStation Features

ControlStation NT is a high performance workstation designed primarily for use as a hardware platform for PC-Based Control and Human Machine Interface (HMI) software packages running under Windows NT® operating systems.

Each model in the ControlStation NT family is a self-contained PC compatible computer, with a built-in flat screen display housed in an industrial IP65 rated front panel. A rugged metal case protects the system against dust, water, and other damage. The case also provides electromagnetic shielding to EN 55022: 1987 Class A (for emissivity) and EN 50082-1: 1992 (for immunity). Input device and serial ports are located on the side of the unit.

The ControlStation is available with autoranging main power input unit for 115 or 230 VAC operation.

The unit is supplied completely assembled and requires only mounting and connecting. Before powering up your system for the first time, familiarize yourself with the procedures contained in Chapter 2, which guide you through the setup of the operating system and network communications.

Feature Summary

When you purchase a ControlStation NT, you receive:

- ControlStation industrial computer, with ControlStation automation software and operating system software installed
- Power cord
- Mounting Clips
- Ethernet driver floppy disk and manual
- ControlStation automation software
- ControlStation automation software licenses and license agreements
- Microsoft Windows NT documentation, software, Certificate of Authenticity and license agreement

Standard Features

Model	Model Number	Specifications
WTA	IC752WTA005	10.4" standard model WTA with Windows NT and PCI/ISA expansion.
WTE	IC752WTE005	10.4" standard model with Windows NT with PC/104 expansion.
ControlStation automation software		Development and Runtime software
CPU		Pentium, 233 MHz minimum (standard)
Hard disk		6.0 GB minimum
RAM		64 MB minimum (standard), 128 MB (upgrade)
Display		10.4" Color TFT – VGA (640 x 480)
Parallel ports		One LPT1
Serial ports		Two RS-232

Application Software

ControlStations are preloaded with ControlStation automation software before shipment.

Network Interface

The ControlStation NT includes an on-board Ethernet adapter that provides a RJ-45 connector for unshielded twisted pair cable.

System I/O

Standard I/O

A side access panel houses all serial and input device ports (printer, keyboard, and PS2 mouse). The ControlStation NT provides the following I/O interface channels:

Model WTA

- two serial interface ports using standard 9-pin D type connectors
- one parallel port
- FDD port
- CD-ROM port

Model WTE

- two serial interface ports using standard 9-pin D type connectors
- one parallel port

ISA Card Expansion (model WTA only)

ControlStation NT model WTA has an expansion slot to accommodate an extra half-size ISA card, in addition to 2 half-size PCI/ISA shared slots. The card is clamped into place using a clamping bracket with screws adjustable to the height of the card.

PC104 Card Expansion (model WTE only)

ControlStation NT model WTE has PC104 expansion capabilities.

If the end application requires serial or parallel interfaces in addition to those provided by the standard system, these can be provided by the addition of a specific PC104 card. A wide selection is available from 3rd party sources:

- Dual channel RS232 asynchronous adapter
- Dual channel RS422/485 asynchronous adapter
- Printer port output/input adapter

The expansion slot within the system allows the card to be clamped into place using mounting stand-offs.

Chapter 2 Powerup and Software Installation

This chapter contains information about powering your ControlStation on and off, setting up your operating system and network communications, and registering your automation software.

Initial Startup

Most configuration activities that you perform on a ControlStation system are more easily completed using a keyboard, or may require a keyboard.

When you first power up your system, you will need to attach a standard PS2-type keyboard to the external keyboard port on the ControlStation. When the system starts, you will be required to enter the Product ID from the Windows NT Certificate of Authenticity, as well as other data.

For details on power supply input, see Chapter 4.

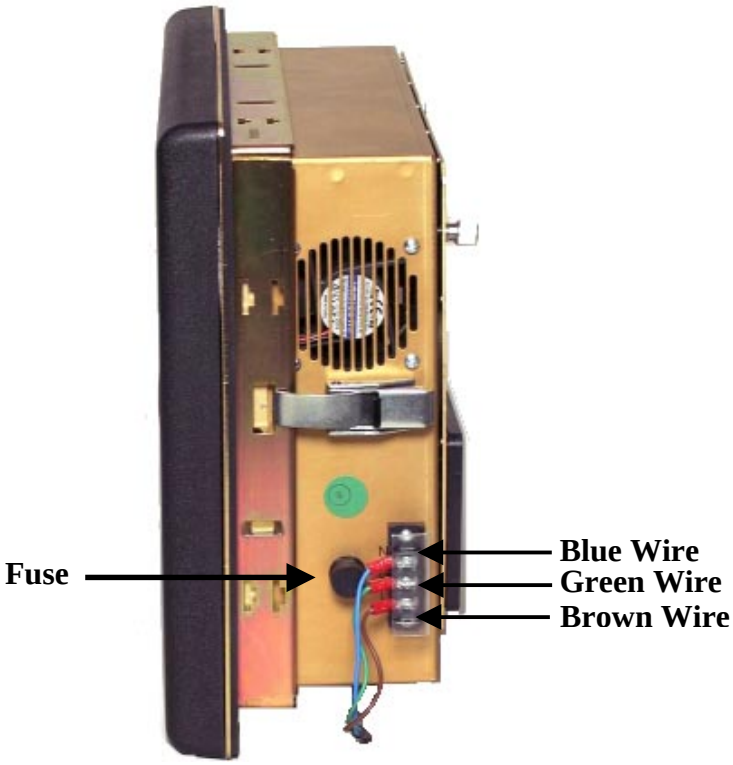
Powering Up the ControlStation

WARNING: Do not attempt to connect or disconnect the power cord from the ControlStation while the cord is attached to a power source. Doing so may result in personal injury or damage to equipment.

To connect the power cord, refer to the picture on the next page and complete the following steps:

1. Remove the small plastic cover, located beside the fuse on the side of the unit.
2. Loosen the mounting screws.
3. Attach the blue wire to the node closest to the ventilation fan.
4. Attach the green wire to the middle node.
5. Attach the brown wire to the node furthest from the ventilation fan.
6. Connect the power cord to an appropriate power source.
7. Replace the plastic cover.

During power up, the processor will run its normal diagnostic checks and indicate the presence of any errors with a screen prompt or warning beeps.



WARNING: Do not attempt to connect or disconnect the power cord from the ControlStation while the cord is attached to a power source. Doing so may result in personal injury or damage to equipment.

Setting Up the ControlStation

1. Plug in the keyboard, PS2 mouse (if available), and power cord.
2. Power on the unit.
3. Read the license agreement
4. TAB to your choice and press ENTER.
5. Press ENTER to start the Windows NT Setup.
6. Type your name.
7. Press the TAB key and type your company name.
8. Press ENTER.
9. Enter your Windows NT Authentication number found on your Windows NT manual. You will need to use the TAB key to get to each number field. If correct, press ENTER.
10. Enter a Computer name. This name should be unique among computers on the same network. Press ENTER.

NOTE: Computer names must be less than or equal to 15 characters to run ControlStation automation software. Each computer on a network must have a unique name.

---

11. You will be prompted for a user name and password.

- To use the auto-logon feature, type **admin** as both the user name and the password. Press the TAB key and type **admin** in the Confirm Password box. Press ENTER.
- To skip the password, press ENTER.
- To assign a password, type in a password, press the TAB key and type the password in the Confirm Password box. Press ENTER.

NOTE: Your system has been set up to enable auto-logon. Auto-logon allows the system to boot into Windows NT without your having to use a keyboard to press CTRL-ALT-DEL.

---

12. Press ENTER to continue with Windows NT Setup.

Configuring the ControlStation to Run on a Microsoft Network

NOTE: Before setting up your new ControlStation for the network, you should consult with your network administrator. Duplicate TCP/IP addresses and duplicate computer names on the same network cause network problems.

1. Plug in the keyboard, PS2 mouse (if available), and power cord.
2. Click the Start button, choose Settings, and then Control Panel.
3. In the Control Panel window, double-click the Network icon. The Network dialog box will appear.
4. In the Network dialog box, click the Identification tab, and enter your Computer name, Workgroup or Domain name, and Computer Description.

NOTE: Computer names must be less than or equal to 15 characters to run ControlStation automation software. Each computer on a network must have a unique name.

5. To add the TCP/IP protocol,

   A. Go to the Protocols tab and click the Add button. The Select Network Protocol dialog box will appear.

   B. From the Protocol list, select TCP/IP and click OK.

11. When you have finished setting up the Network, click OK in the Network dialog box. Click Yes to reboot your system now.

Registering Your ControlStation automation software

Before you can start developing projects with your ControlStation automation software, you must authorize the software with a program called Product Authorization. If you don't authorize the software, you will only be able to use the ControlStation automation software for a four day trial period. If you do not want to develop your control applications on the ControlStation, you'll also need to move the Editor portion of the software and its authorization to another computer (see the Development Tools Getting Started manual). Product Authorization will only take a few moments and will allow you to take advantage of any product support for which you qualify. You will need to contact us by telephone, fax, or email as part of the authorization process.

To authorize a copy of ControlStation automation software

1. Have your serial number ready. The serial number can be found on the yellow product information sheet included with the ControlStation documentation.
2. Run the Product Authorization program from the Start menu/Programs/FrameworX/Product Authorization. The Products Authorization dialog box appears.
3. Click Software Keys. A dialog box appears containing customer information.

4. Under Utilities, click Add. The Product Authorization wizard appears.
5. Follow the steps as they appear on the screen. When you are prompted for a key code, either call the number on the screen to receive your new key code or click Print FAX Authorization Page to print a fax sheet which you must fax to us (our fax number will be on the print out). We will then fax you back with the new key code. You can also email us at authorization@total-control.com. Product Authorization is complete once you type in the new key code.

To move the authorization to another computer

The ControlStation automation software can only be used on the computer it is authorized on. If you want to develop your control projects on a different computer than the ControlStation, you will need to complete the following steps to move the authorization to the other machine.

NOTE: You will need to connect an external floppy drive to the ControlStation in order to complete the following steps.

---

1. Install the ControlStation automation software on the computer that the authorization will be moved to.
2. From the Start Menu, navigate to Menu/Programs/FrameworX/Product Authorization. The Product Authorization dialog box appears.
3. Click Software Keys.
4. There is a site code on the top right hand side of the next screen. Write this code down carefully. You will need it as a Target Site Code during the move.
5. Under Utilities, click Add. The Product Authorization wizard appears.
6. Click Authorize by disk. You will be asked for an authorization disk. At this point, go to the authorized computer (likely the ControlStation) and run the Product Authorization program.
7. Click Software Keys.
8. Click Move. On the following screen, click Next. Enter the Target Site Code that you wrote down from the other computer in step 4, and click Next. Verify that the site code is correct and click OK.
9. Insert a blank formatted floppy disk into the external floppy drive and click Next. The authorization code will be moved to the disk and a dialog box should appear telling you it was successful. Click OK.
10. Insert the floppy disk into the computer you are moving the authorization to. The screen that is asking for a disk should be displayed. Click Next.
11. Click Finish. A screen should appear telling you if the move was successful.
12. Click OK. The authorization has now been moved to the new computer.

Installing Application Software

The ControlStation NT is shipped with the Windows NT operating system and ControlStation automation software already installed. If it is necessary to reinstall software, consult the documentation supplied with the software.

Directory Structure

The contents of the ControlStation NT hard drive, as shipped, are listed below.

Windows NT Systems

C:\FXCD\i386	**ControlStation Automation Software CD**
C:\i386	**Windows NT CD**
C:\Backpack	**Backpack CD drivers**
C:\TBASE	**Touch screen drivers**
C:\i386\DRVLIB.NIC\Realtek8139	**Network drivers**
C:\SP4\i386	**Service pack 4 for Windows NT drivers**

NOTE: If you reload any Windows NT component requiring file, such as network driver, you must reload service pack 4. To do this, type:

```
C:\SP4\i386\sp4i386
```

Reloading NT on the Hard Disk From CD

To reload Windows NT you should follow the instructions in the Windows NT manual from Microsoft. After completing the installation, the BOOT.INI file must be modified to ensure that the touch screen works correctly.

Touch Screen Driver for Windows

Operation of the touch screen with Windows NT requires the proper software driver. This software is installed and configured at the factory. We recommend that you do *not* change these settings.

- Model WTA uses the Dynapro™ SC3 driver.
- Model WTE uses the Touch-base™ UPDD driver.

The integral touch screen of the ControlStation unit is internally connected to serial port COM1 on the system board. The driver settings can be changed by running the Touchscreen icon in Programs.

The touch screen must be set to:

COM Port	= 1
Interrupt	= 4
I/O Address	= 3F8

Shutting Down the Computer

WARNING: To avoid damaging files, always shut down Windows software before removing power from your ControlStation product.

To shut down Windows NT software, select **Shut Down** from the Start menu.

Chapter 3 Hardware Installation

This chapter contains procedures for mounting the ControlStation, which has been designed for simple installation.

A single cut-out is required to mount the ControlStation. Eight spring-loaded clips are supplied, and are used behind the mounting panel to secure the unit.

This chapter also describes how to install a PC104 card, and how to change the air filter and fuse.

Mounting Guidelines

NOTE: The IP65 rating applies to the front panel of the ControlStation only, not the rear of the unit.

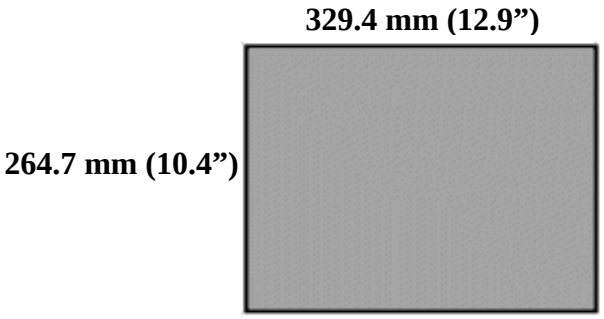
- In an industrial environment, the panel into which the unit is mounted should provide protection from dust, dirt and water.
- The panel into which the unit is mounted should be capable of supporting the weight of the ControlStation without distortion to the panel. The mounting clips will support a panel thickness of up to 10mm (0.39 inch).
- All eight mounting clips must be fitted properly to achieve a good seal between the ControlStation and the panel to which it is mounted.
- Inlets and outlets must have at least 25mm of space around them and not be obstructed.
- Adequate airflow around the exterior of the unit is important to the interior temperature of the unit. Two fans are used to create air flow through the ControlStation, ensuring that a correct working temperature is maintained.

  Incoming air passes through a filter that removes dust and dirt. The filter should be checked and replaced regularly. For details, see page 3-6

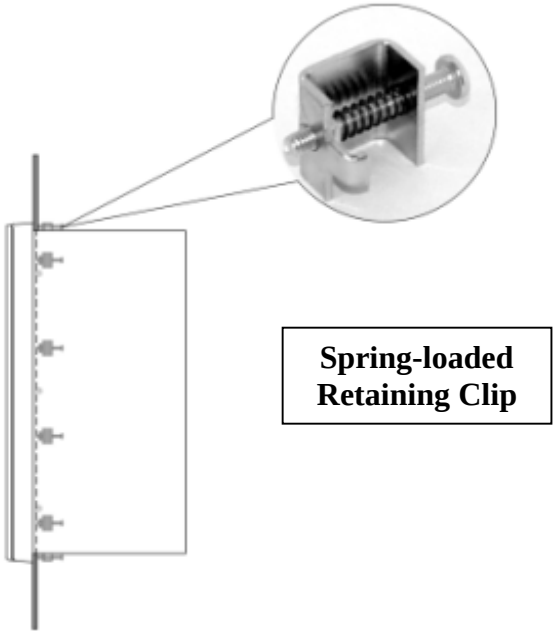
Mounting Procedure

Use the following procedure to mount the ControlStation:

1. Cut an opening in the panel to the dimensions shown. The cut-out dimensions of 318 x 254mm (12.55" x 10.0") allow a 1.2mm clearance on each edge of the front of the ControlStation. The unit requires a minimum of 74mm (2.9") depth when mounted.



2. Detach the rear housing from the front of the ControlStation following the instructions in the section entitled “Operating the Field Detachable Rear Housing.” (page 3-3) Position the front of the ControlStation in the cut-out and fit the eight spring loaded retaining clips into the slots on the ControlStation. All eight clips must be used to produce a good seal.



3. Tighten the screws on each clip so that the spring is compressed by the nut. To ensure a good seal between the ControlStation and the mounting panel, the clips must be tightened evenly. (Tighten each of the clips in turn, a little at a time.)
4. When the springs are fully compressed, no further tightening of the clips is necessary. The ControlStation is locked into place.
5. Reattach the rear of the ControlStation to the mounted front following the instructions under "Reattaching the Rear Housing."

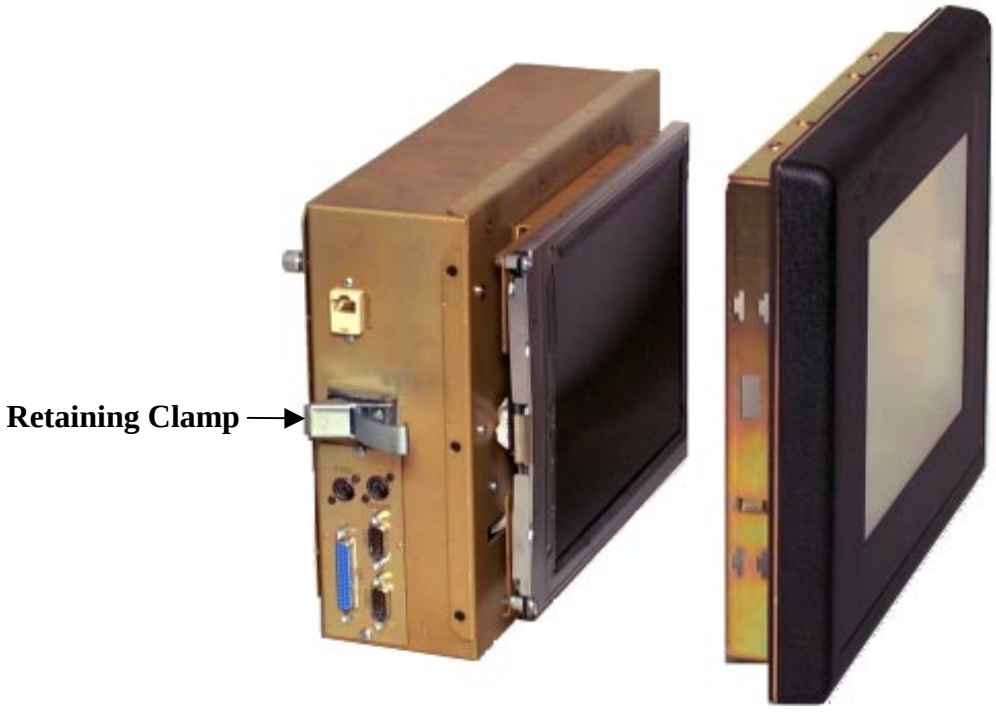
Operating the Field Detachable Rear Housing

The ControlStation is equipped with a field detachable rear housing to facilitate the mobility of the CPU unit. This feature allows you to detach and completely separate the CPU from the touch-screen for installation or maintenance needs.

CAUTION: Power down the ControlStation and remove the power cord from the power source before detaching or reattaching the rear housing.

Detaching the Rear Housing

1. Push the silver clamps located in the middle of both sides of the rear housing towards the front of the ControlStation.
2. Unlatch the now loosened retaining clamps from the front housing.
3. Pull the rear housing apart from the front housing by pulling straight back on the rear housing.



Reattaching the Rear Housing

1. Line up the rear housing with the front housing. Take special care to ensure that there is no dust inside the front housing. Any foreign material caught between the front and rear housing will become magnified during operation.
2. Insert the rear housing into the front housing, making sure that the touch screen nodes are lined up correctly.

WARNING: Failure to line up the rear housing with the front of the ControlStation may cause damage to the touch screen during reattachment.

3. Fasten the retaining clamps of the rear housing to the corresponding slots in the front housing.
4. Pull the clamps back towards the rear of the unit, securing the rear housing to the front of the ControlStation.

Installing a PC104 Card (model WTE only)

To avoid damage from electro-static discharge, adhere to the following precautions when installing the PC104 Card:

- The card is packaged in a static-safe bag which protects the product during shipping. Before removing the card from this bag, be prepared to handle it in a static-safe environment.
- Wear a properly functioning anti-static strap and be sure that you are fully grounded. Never touch the card, or any components inside the ControlStation unless you are wearing an anti-static strap.
- Any surface the unprotected card is placed on should be static-safe, facilitated by anti-static mats, if possible.
- Extra caution should be taken in cold, dry weather, when static charges can easily build up.

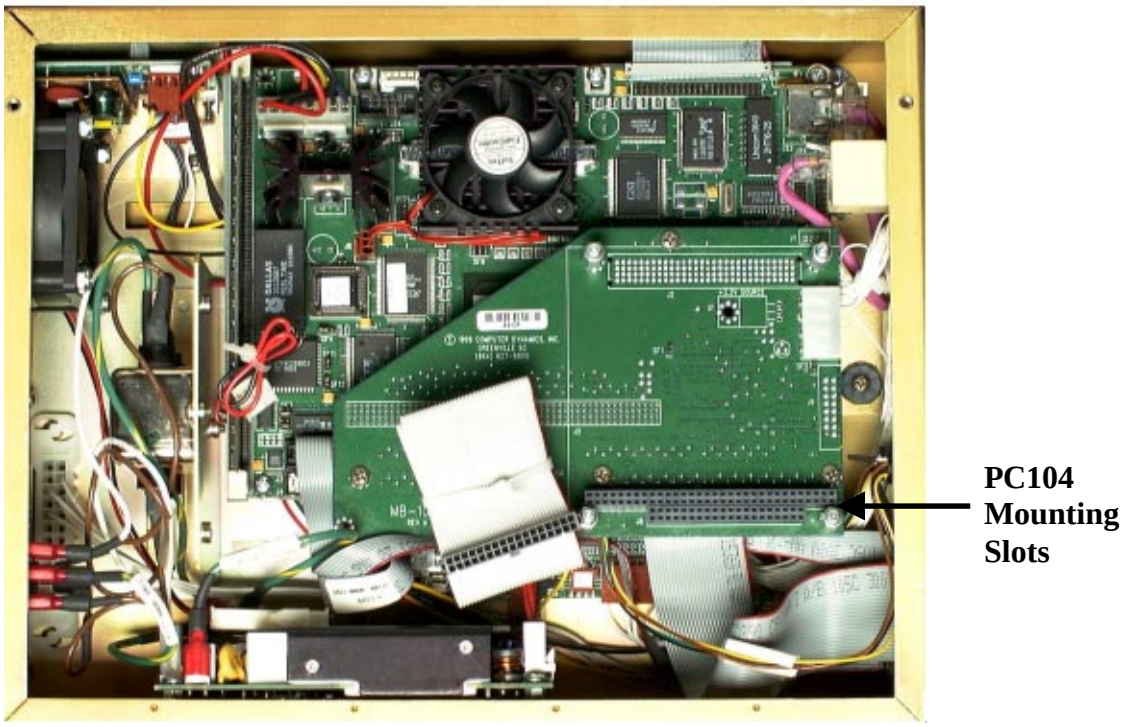
The PC104 expansion slot within the system allows the card to be clamped into place using a clamping bracket with screws adjustable to the height of the card.

WARNING: Always remove the rear ControlStation housing before removing the PC104 plate screws. Otherwise, the internal mounting bar will fall into the unit. To avoid a risk of electric shock, turn off power to the ControlStation and disconnect the main power before removing the rear cover from the unit.

When the back-plate screws are loosened, the back-plate will slide upwards and can then be lifted clear of the main unit.

Rear View of ControlStation NT Model WTE

An empty slot must have a blanking plate fitted, or the air flow will not comply with agency requirements. The blanking plate can be removed in order to install a new card.



Internal View of ControlStation NT Model WTE

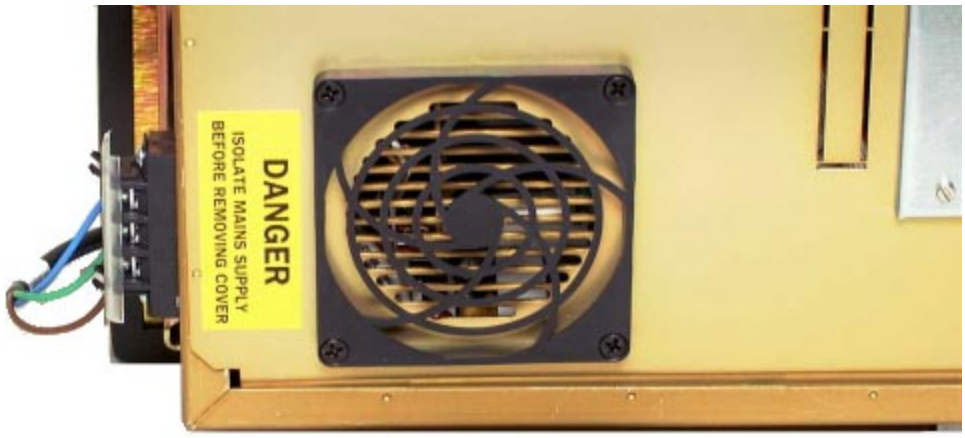
Changing the Air Filter Element

The air filter element should be changed or cleaned every three months -- sooner in dusty environments. If the air filter is not changed at suitable intervals, or if a non-approved filter is used, the unit may overheat. For details of approved filter elements, refer to "Environmental Specifications" in Appendix A.

The filter element is located on the outside of unit, on the rear housing back-plate.

CAUTION: Power down the ControlStation before replacing the air filter.

1. Pull the plastic cover from the air filter at the back of the ControlStation.
2. Replace the old filter with the new filter.
3. Snap the cover back onto the back plate of the ControlStation.



Air Filter and Cover

Changing the Fuse

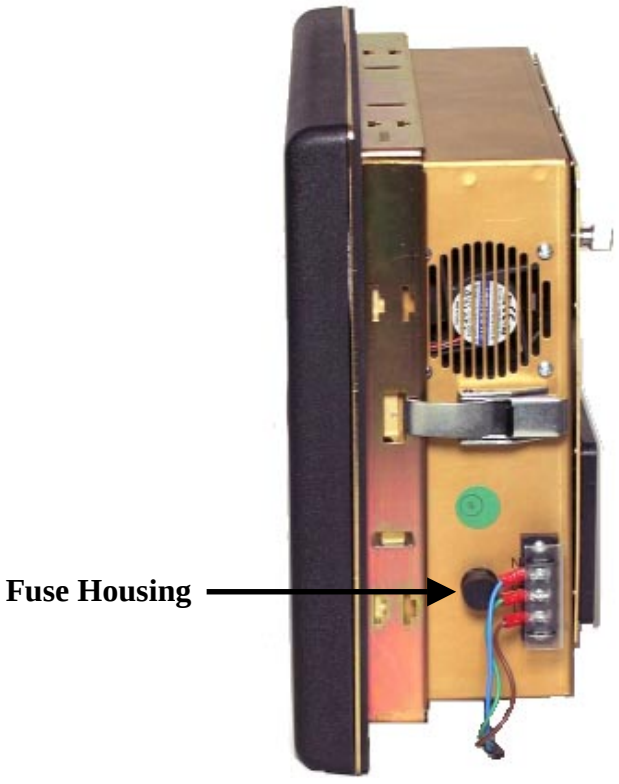
CAUTION: Power down the ControlStation before changing the fuse.

To remove the fuse:

1. Locate the fuse on the side of the rear housing, next to the power cord.
2. Turn the fuse counter clockwise to release it.

To replace the fuse:

1. Insert a new fuse completely into the socket. (2A 250 VAC)
2. Push and turn the fuse clockwise to lock it in place.



Side View of ControlStation NT Model WTE

Chapter 4 Connectors

This chapter describes the connector layout on the ControlStation. Keyboard and data connectors are provided on the proprietary cards fitted in the ControlStation.

- Keyboard (CPU card)
- PS2 Mouse Port (CPU card)
- Serial Ports COM 2 and COM 3 (CPU card)
- Parallel Port – 25-pin (CPU card)
- Network (PCI expansion card and CPU card)

For details about connectors on proprietary cards you have installed in the Control Station, refer to the manufacturer's documentation provided with your card.

CAUTION: External devices (printer, external disk drive, etc.) should **not** be connected or disconnected from the ControlStation while the unit is powered up.

Power Input

The ControlStation is powered by an internal, autoranging AC power supply unit that accepts 115 to 230 VAC input ranges.

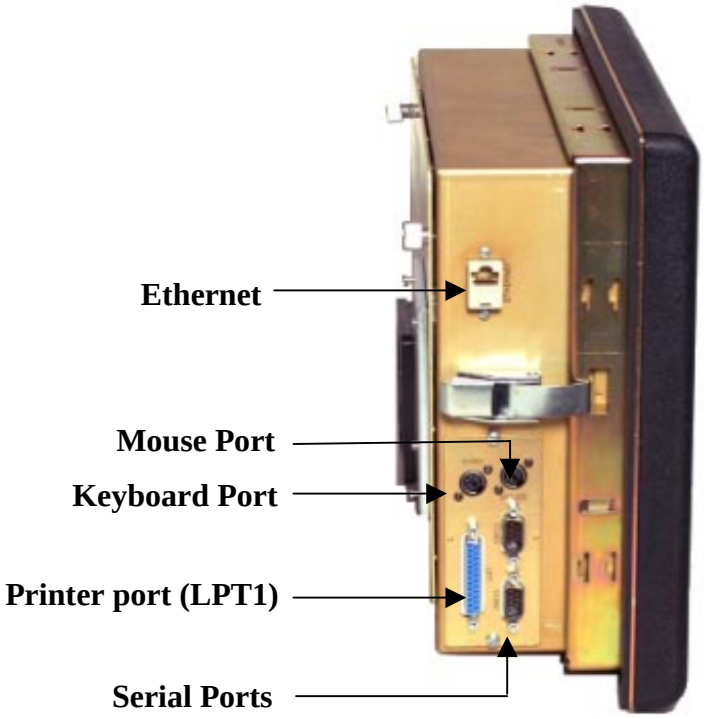
For power supply details, refer to specifications in Appendix A.

WARNING: For all equipment that is connected to a power outlet, the socket outlet should be installed near the equipment and should be easily accessible.

System I/O

The ControlStation motherboard provides the following I/O interface channels:

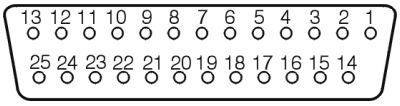
- Two serial interface ports that use standard 9 pin D type connectors.
- An enhanced parallel port, which is accessible at the side of the unit.
- Two USB ports.
- If the end application requires serial or parallel interfaces in addition to those provided by the standard system, you can install a specific PC104 card. A wide selection of cards that provide the additional connectivity are available.
    - Dual channel RS232 asynchronous adapter.
    - Dual channel RS422/485 asynchronous adapter.
    - Printer port output/input adapter.



Port Side View of ControlStation NT Model WTE

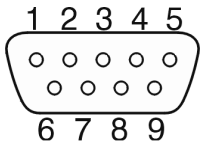
Printer Port LPT1

A 25 pin D type female connector mounted on the side access panel of the ControlStation is used for the printer port.



Pin	Assignment	Pin	Assignment
1	Strobe	10	Acknowledge
2	Data Bit 0	11	Busy
3	Data Bit 1	12	Paper End
4	Data Bit 2	13	Select Out
5	Data Bit 3	14	Auto Feed XT
6	Data Bit 4	15	Error
7	Data Bit 5	16	Initialize Printer
8	Data Bit 6	17	Select In (from Printer)
9	Data Bit 7	18 to 25	Ground

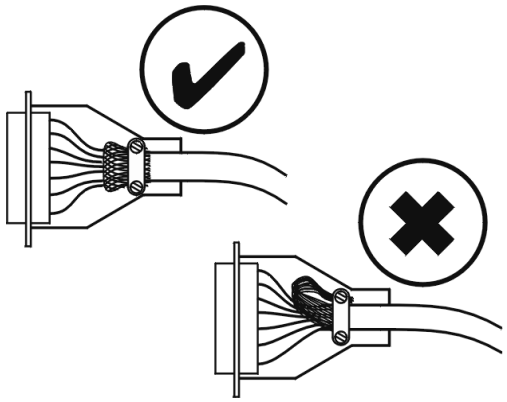
Serial Communication Cables



RS-232C Name	PIN	Assignment
CF	1	DCD (Data Carrier Detect)
BB	2	RX (Receive Data)
BA	3	TX (Transmit Data)
CD	4	DTR (Data Terminal Ready)
AB	5	GND (Signal Ground)
CC	6	DSR (Data Set Ready)
CA	7	RTS (Request to Send)
CB	8	CTS (Clear to Send)
CE	9	RI (Ring Indicator)

To ensure that the installation meets the EMC radiation specification, the serial cables must comply with the following requirements:

- The cables must be shielded
- The D type connector covers must provide EMC shielding (e.g. Metallized plastic or die cast metal covers)
- The cables must be terminated with 360 degree termination of the shield, as illustrated below:



Chapter 5 System Operation

This chapter provides details of system operation. The following topics are covered:

- System Peripherals
- Graphics Controller
- Operator Interfaces

System Peripherals

Hard Disk Drive

The ControlStation has an internal system hard drive for the mass storage of data. The drive is a standard unit with EIDE/ATA-2 interface.

Graphics Controller

A dedicated graphics controller card, attached to the motherboard, provides the interface for the flat panel display.

The following features are supported:

- Display panel resolutions of VGA (640 x 480) with 256 color support.
- An external CRT interface (not included) using a 15 pin high density D type connector, and cable (not included).

Display Types

The ControlStation has a 10.4 inch color TFT (VGA resolution) screen. The flat screen display has the following features:

- High Luminance (equal to or greater than 200cd/m2).
- Wide angle viewing.
- A built-in backlight with a long life backlight tube (equal to or greater than 25,000 hrs).

Operator Interfaces

External Keyboard and Mouse

An external keyboard and mouse (both using PS2 connectors) can be attached to connectors on the side of the unit.

The touch screen and PS2 mouse will work simultaneously if the mouse is Microsoft or IBM PS2 compatible. Because Microsoft Windows can load only one mouse driver at a time, it is not possible to provide simultaneous support for a mouse that requires its own specific Windows driver.

If you are installing an optional serial card, none of the ports can be configured as COM 1, which conflicts with the touch screen.

Touch Screen

The ControlStation includes a resistive overlay touch screen on the flat panel display.

The touch screen has a touch-resolution of 1024 x 1024 touch points and provides an efficient and reliable method of entering information. The screen responds to the touch of your finger, with or without a glove.

The touch screen is connected internally to the COM 1 serial port, which allows it to function with Automation software. If you install a card that has settings that conflict with the COM 1 serial port, you will need to change the card's configuration.

Touch Screen Driver for Windows

ControlStation automation software is supplied with a driver to interface with the touch screen surround.

The touch screen is internally connected to COM1. Parameters must be set within the driver so that they match the hardware settings. The factory default settings are:

COM Port	= 1
Interrupt	= 4
I/O Address	= 3F8

These parameters are written into the system registry file by the driver setup utility. The driver is installed, configured and calibrated at the time of manufacture.

Chapter 6 BIOS Settings

It is normally unnecessary to change the hardware configuration settings in the CMOS memory. If these settings become corrupt, use the following procedures to reload the factory configuration:

1. Connect a keyboard to the unit and turn on the power.
2. During the computer power-up sequence, press the F2 key, when prompted, to enter Setup mode. A screen will appear offering several options for changing settings, restoring default settings, and other functions.
3. Select the Load Setup Defaults option. Then, select the Save CMOS settings option. You will be prompted to exit. *Do not* exit at this time.
4. Go into Standard CMOS Setup and make the following selections:

	Type	**Mode**
Primary HDD master	AUTO	AUTO
Primary HDD slave	AUTO	AUTO
Secondary HDD master	AUTO	AUTO
Secondary HDD slave	AUTO	AUTO
Drive A	NONE	
Drive B	NONE	

5. Exit Standard CMOS Setup.
6. Go into Integrated Peripherals Setup. Set parallel port to ECP+EPP.
7. Select Save and then Exit Setup. The startup sequence should begin.

The system is now configured with factory CMOS settings.

Chapter 7

Diagnostics and Troubleshooting

This chapter contains *Self-Test Diagnostics*, *Troubleshooting*, and *Corrective Actions*.

- *Self-Test Diagnostics* describes how to respond to errors that may be detected by the automatic self test that is performed each time the ControlStation powers up.
- *Troubleshooting* contains tables of symptoms, possible causes, and recommended corrective actions.
- *Corrective Actions* contains detailed procedures that are too lengthy to include in the Troubleshooting tables.

Self-Test Diagnostics

The computer automatically performs self-test diagnostics each time it is powered up. The self-test consists of a series of checks that verify correct performance of the computer hardware. When the self-test is being performed, you will see the message XXXX KB OK displayed on the screen, where XXXX is a number that increases until it matches the amount of usable memory.

System Test and Initialization

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will see an error message on the screen. There are two kinds of errors: fatal and non-fatal. If a non-fatal error occurs, the system can usually continue the boot up sequence. Non-fatal error messages usually appear on the screen with the following instruction:

```
press <F1> to RESUME
```

Write down the message and press the F1 key to continue the start-up sequence.

System Configuration Verification

These routines check the current system configuration against the values stored in the CMOS memory. If they don't match, the program will generate an error message. To correct this condition, you will need to run the BIOS setup program and correct the configuration information in memory.

There are three situations that might warrant changing the CMOS settings:

1. You are starting your system for the first time.
2. You have changed the hardware attached to your system.
3. The CMOS memory had lost power and the configuration information has been erased. If this has happened, call the Support Hotline.

See Chapter 6, *BIOS Settings*, for information on restoring factory CMOS configuration.

Troubleshooting

Powerup

Symptom	Possible Causes	Solution
Display is blank.	See “Display” on page 7-4.	See “Display” on page 7-4.
Safe Recovery Error message displayed.	Occurs on initial power up if the unit is accidentally turned off without first shutting down the Windows NT software.	The ControlStation will power up normally.
Memory count during powerup self-test is incorrect.	Optional DIMM is installed incorrectly or is incompatible with the ControlStation CPU.	Make sure that the appropriate memory is installed correctly.
CMOS checksum error — Defaults loaded CMOS battery failed message displayed.	CMOS battery failure.	Note: This battery has a lifetime of up to 10 years under normal operating conditions. For more information, see “CMOS Checksum Error” on page 7-6.
A screen appears just after powerup, or just after reset, which has the title “CMOS Setup Utility.”	The F2 key has been accidentally pressed.	Cycle power again. The ControlStation will power up normally.
The ControlStation reset even though the power was not interrupted.	The Ctrl-Alt-Del keys were pressed twice at the same time.	This should never be done, unless you are attempting to reset the ControlStation.

Display

Symptom	Possible Causes	Solution
Characters are dim.	Computer screen is in direct light.	Change lighting or adjust contrast.
Display is blank.	Screen temperature is outside operating range.	If ControlStation is in direct sunlight, move it and allow it to cool.
	ControlStation is set up for invalid video mode.	Reboot, then select VGA Mode. If Windows is now displayed, go into Control Panel, Display Settings, and change settings to the correct video driver and mode. Contact the Support Hotline for more information.
	Rear housing is not completely secured to front of ControlStation.	Reattach rear housing to front of ControlStation, making sure that the two separate parts are lined up correctly. Follow the instructions in chapter 3.
	Screen saver is active.	Touch the screen.

Memory

Symptom	Possible Causes	Solution
Memory count during powerup self-test is incorrect.	Optional DIMM is installed incorrectly or is incompatible with the ControlStation CPU.	Make sure that the appropriate memory is installed correctly.
Out of Memory message is displayed or insufficient memory error occurs during operation.	System ran out of memory for the application.	Check the memory requirements for the application. (Refer to the application documentation.) Install additional memory.
	Too many terminate and stay resident (TSR) programs running.	Modify the startup folder to use only those TSR applications that are really needed.

External PS2 Mouse

Symptom	Possible Causes	Solution
Cursor does not respond to mouse movement.	Mouse not plugged in.	Power down ControlStation. Plug mouse into mouse port on Control Station and reboot.
	The type of mouse is not supported.	Use a PS2 mouse.
	System is busy.	Press Ctrl-Alt-Delete to view task list.
	Mouse not detected.	Restart ControlStation with external mouse connected.

Keyboard

Symptom	Possible Causes	Solution
External keyboard locks up	The type of keyboard is not supported.	Use a Key Tronic keyboard. (Most keyboards will work. However, we recommend a keyboard manufactured by Key Tronic.)
	Keyboard not plugged into keyboard port on ControlStation.	Plug keyboard in.
	System is busy.	Press Ctrl-Alt-Delete to view task list.

Printing

Symptom	Possible Causes	Solution
Printer will not turn on.	Cables not connected properly. Printer power cord not plugged in.	Ensure that the cables are properly connected and that the power cord is connected to the electrical outlet.
Printer will not print.	Printer is not turned on.	Turn on the printer
	Printer is not online.	Set the printer to online.
	The device drivers for your application are not installed.	Install the correct printer drivers for your application in Windows.
	Printer that is set up for a network is not connected to the network.	Connect the printer to the network.
	Printer cable is too long, unshielded, or defective.	Replace the cable.
Printer is offline.	Paper tray is empty.	Fill the paper tray with paper. Set printer to online.
Printer prints garbled information.	Correct printer drivers not installed.	Install the correct printer driver.
	Cable is not connected properly.	Ensure that the printer cable is connected properly to the computer.
	Problem specific to printer.	Run a printer self-test. Refer to the documentation provided with your printer for instructions. If the self-test fails, the problem is printer-specific. The printing section of the software documentation and in Windows online Help may also be helpful.

Corrective Actions

CMOS Checksum Error

If the CMOS battery has failed, the following error messages will be displayed on the screen:

```
CMOS checksum error - Defaults loaded

CMOS battery failed
```

If you see the above message, you can still operate the ControlStation by pressing the F2 key and manually setting up the system. (You will need to set up the computer each time the system is powered up.) For setup parameters, refer to “BIOS Settings.”

This battery has a lifetime of up to 10 years under normal operating conditions. If the battery fails, contact the Support Hotline.

Appendix A

Technical Data

Mechanical Specifications

Front Assembly

The ControlStation has a 10.4” display screen. The front panel assembly is engineered to IP65 standards.

Main Chassis

The main chassis is manufactured from aluminum and houses the motherboard, which is mounted securely in a vertical plane, parallel to the front of the ControlStation.

The chassis has been designed to conform to the standards necessary to meet UL and CE approvals.

Model WTA only: The housing for the card connector is recessed so that the card interface does not protrude beyond the profile of the main housing.

Rear Cover

The rear cover of the unit is fixed to the main chassis so that there are no slots allowing EMC emissions to escape. The cover can be removed easily without breaking any electrical connections.

Panel Mounting System

Eight spring-loaded clamps are provided for mounting the ControlStation to a panel.

Field Detachable Rear Housing

The ControlStation is equipped with detachable rear housing to facilitate the maintenance and installation of the unit in the field.

Functional Specifications

CPU and Memory	
Microprocessor	Pentium 233MHz minimum*
User Memory	Minimum 64Mbyte*
Operating System	Windows NT
Hard Disk	6.0 Gbyte minimum*, IDE standard 2.5 inch mounting

PC Backplane	WTA	WTE
PC104/ISA Expansion Slots	2 PCI slots and 3 ISA slots (shared)	ISA expansion slot available.
Total current available	By default, the MAX2 board in the system should be required to provide less than 2 amps of +5 VDC, less than 1 amp of +12 VDC, and less than .5 amp of -12 VDC. An auxiliary power connector on the backplanes can increase the amount of power available to the I/O boards if required.	

Display	
Display Variants	10.4 inch Color TFT – VGA (640 x 480)
Active Display Area	10.4” inch

Power Requirements	
AC Models	
AC Input	90 to 264 VAC, 100W autoranging
Power Rating	47 to 63Hz; 12/4A
DC Model	
DC Input	18 to 36 VDC (24 VDC nominal), 3A max

* Contact your local distributor for upgrades.

Ports	
Parallel Port	One: LPT1
Serial Ports	COM1 internal RS232 port COM2 external RS232 port COM3 external RS232 port
Keyboard Port	PS2
Mouse Port	PS2

Physical		
Dimensions		
	Model WTA	**Model WTE**
Main Enclosure	305mm wide (12 inches) 241mm high (9.5 inches) 89mm deep (3.5 inches)	
Front Panel	32mm (1.25 inch) deep Extends 11mm (2.44 inches) beyond main enclosure on all sides.	
Weight (base unit with no optional cards installed)	6.8 Kg (15lbs)	5.9 Kg (13lbs)

Environmental Specifications

Operating Temperature	0 to 50°C (TFT) display
Storage Temperature	-20° to 60°C
Relative Humidity	5 to 90% non-condensing

Filter Pads	
Dimensions	80mm by 80mm (3.15” by 3.15”)
Material	Polyeurethane foam.
Performance Requirements	Retain 75% by weight of dust particles down to 5-10 microns in size
	Withstand temperatures to 100° C
	Provide flame resistance to BS2963

Note: Filter pads (reference Globe Motors part FFM3145) are available from:

Allied Electronics
Tel: 1-800-433-5700

http://www.alliedelec.com

http://www.globemotors.com

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